Wildlife Habitat Management on the Farm

By
Steve Miller and
James C. Hyde

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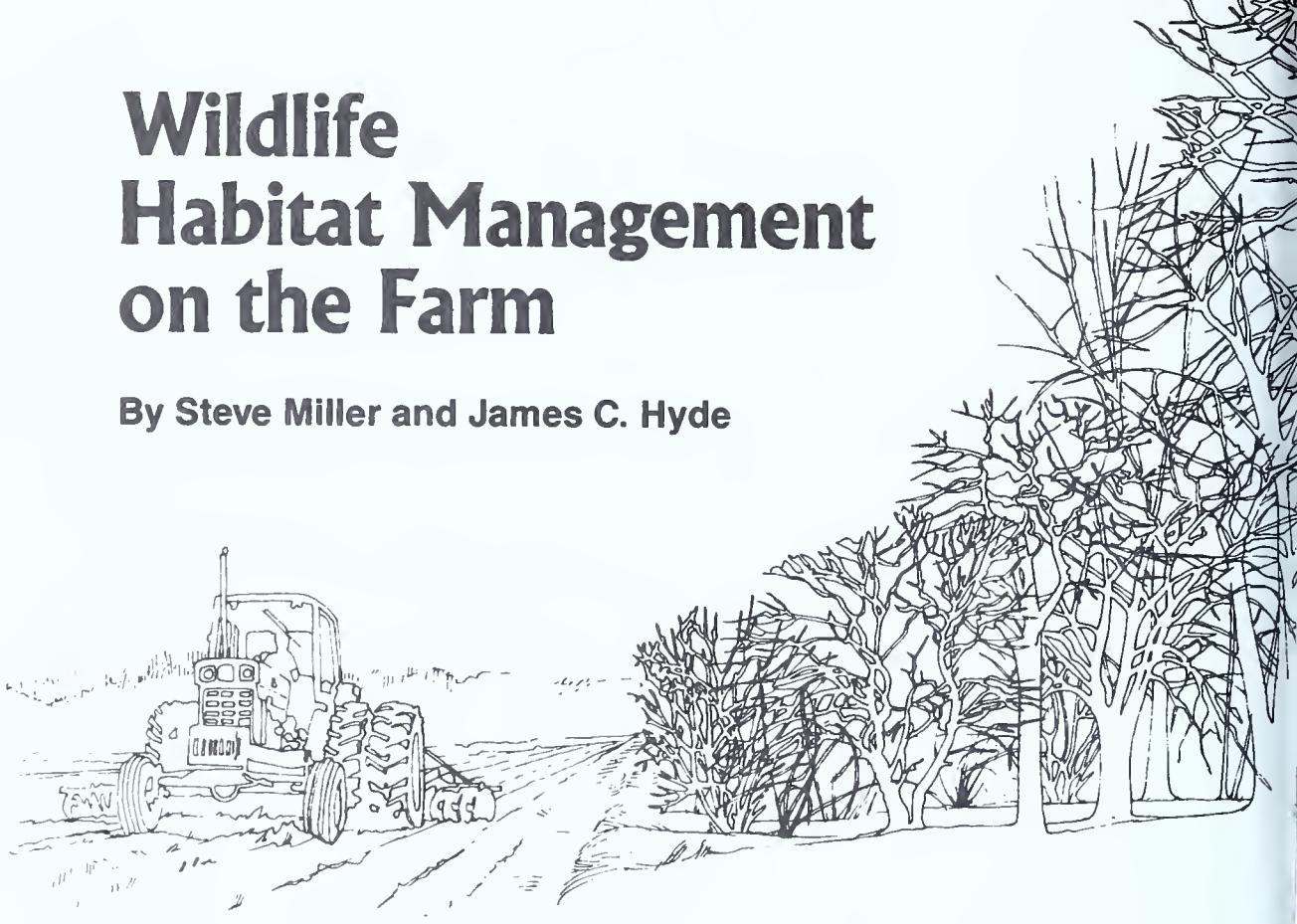

Wildlife on the Farm

EVERY FARMER knows that all living things must live in harmony with their environment. Each living being is dependent upon other living and nonliving factors for existence. The wellbeing of wildlife is closely interwoven with soil, water and plant resources. The abundance and distribution of wildlife will be largely determined by the different land uses and management practices employed by the farmer. The basic fertility of the farmland soils and the production of food and vegetative cover are factors that influence wildlife populations on farmlands.

Rarely will you find a farm in Pennsylvania that has reserved its most fertile soils primarily for wildlife use. Fertile soils typically are reserved for crop and/or hay production and sometimes pastureland. Before determining a land use plan, a farmer should consider a number of things. The farmer will want to know how to best manage the resource base in order to sustain a high level of production over time. He must determine whether or not the available resources will support the desired uses, and if the resulting income will provide an adequate standard of living for him and his family. He must also consider whether a specific land use and the associated management conditions will provide an attractive, convenient and satisfying environment in which to live and work.

A single farm can support a number of different land uses. Major land use categories typical of farms include crop and hay production, pastureland, and woodlots.

The primary land uses selected for a farm dictate the kinds and amounts of vegetation. Available vegetative species influence the types of wildlife habitat and, thus, the wildlife populations that will inhabit farmlands. Each conservation or farming practice planned for the primary use will hinder or support successful habitat management. To provide wildlife habitat as an integral component of the se-

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lected primary land uses on a farm, conservation practices must be developed and carefully evaluated to determine those which will best support both objectives.

Managing Cropland for Wildlife

When a farmer opts for cropland as a primary land use, he hopes to efficiently obtain optimum crop yields of high quality and to conserve the soil for continued productivity. Such rewards do not happen by accident but are the result of careful planning, implementation and maintenance of his conservation cropping system, and any necessary supporting treatments. Many conservation practices applied to croplands to control erosion can be beneficial in creating or maintaining wildlife habitat elements. Knowledge of compatible conservation measures that are beneficial to wildlife will reap rewards in both diversity and numbers of wildlife on the farm. The following cropland best management practices can either create or support wildlife habitat quality on the farm:

Stripcropping and Contour Farming Systems

If all of our farm land were nearly flat, soil erosion would not be a problem. However, the rolling topography characteristic of much of Pennsylvania's cultivated cropland requires a farmer to apply conservation practices that will minimize the loss of soil and the concurrent reduction in productivity. Stripcropping and contour farming reduce soil erosion by retarding water runoff and improving water penetration into the soil.

Contour farming is farming sloping land in such a way that plowing, planting, cultivating, and harvesting follow the contours of the fields. Stripcropping involves growing crops in an alternate arrangement of strips or bands to reduce soil erosion. Contour stripcropping is stripcropping on the contour. Crops are planted so that a strip of grass, legumes, or close growing crop is alternated with a strip of clean-tilled or fallow crop. Edges created by the alternating strips attract wildlife for feeding and nesting. It is well known that the edges between different kinds of vegetation pro-

vide more suitable wildlife habitat than single types of cover.

Wildlife of various species can benefit from these practices if only a minimum number of fencerows, hedgerows, stone walls, or other obstructions in fields are removed to establish contour strips. These habitat elements serve as vital travel and cover lanes for wildlife in croplands and contribute to greater use of cultivated acreage by farm wildlife species. If existing obstructions must be removed to establish the contour strips, planting woody hedgerows can compensate for these habitat losses if they are located along the strip boundary.

Planting hay or food-bearing shrubs in field corners and where equipment use is restricted will provide additional wildlife food and cover. Areas maintained in sod provide nesting cover and enhance wildlife production, especially if mowing is delayed until July.

Conservation Tillage Systems

Conservation tillage is a form of land preparation that retains protective amounts of residue mulch on the surface throughout the year. Conservation tillage includes such practices as no tillage, strip tillage, and other methods of noninversion tillage that leave at least 30 percent of the soil surface covered after planting. When performed annually with crop residue management practices, this practice can significantly reduce both nutrient and soil losses from the farm.

Conservation tillage generally has a positive impact on wildlife. Using crop residues to protect cultivated fields during critical erosion periods also provides food and cover for wildlife. Waste grains left on the surface with crop residues provide extensive feeding areas for wildlife during migration periods and over the winter months. Residues of crop leaves and stalks also furnish cover for animals feeding in the field. Many species of ground nesting birds utilize crop residues on no-till fields as nesting sites.

Researchers in Iowa found a substantially greater diversity and density of birds nesting in no-till row crop fields than in conventionally tilled fields, and nest success was comparable to idle areas such as fencerows. Birds found nesting in no-till

fields include meadowlarks, killdeer, vesper sparrows, grasshopper sparrows, and pheasants. These birds help keep insect pest population in check and make pest control less of a problem for the farmer.

Conservation tillage has grown in popularity across Pennsylvania in recent years. These practices have gained the support of Commonwealth farmers as a means to reduce soil losses, to lower crop production costs, and to enhance wildlife populations.

Careful planning is essential to ensure proper crop management coupled with desired wildlife benefits. For example, a farmer who is interested in providing habitat for pheasants should be encouraged to employ fall-seeded no-till operations in his small grain fields rather than spring-seeded alternatives. It is also quite possible to meet the 30 percent cover requirement for soil conservation yet contribute little food or cover to wildlife. Such practices as chopping or shredding cornstalks after harvest, though ensuring protection of the soil, significantly reduce the value of the residue to wildlife. Undisturbed harvested crop fields receive the greatest use by wintering wildlife.

Most concerns about conservation tillage center on increased use of pesticides and its possibly harmful side effects on wildlife populations. With reduction or elimination of tillage, many farmers have increased their use of herbicides to control weeds in the crop and insecticides because certain insect pests can be harbored in the crop residues. Most of the insecticides and herbicides in use today are short-lived chemicals that persist in the environment for hours or days. Currently used chemicals have been implicated as the cause for decline in wildlife populations; however, there is considerable debate as to how acute and widespread the effect may be. Herbicides can impact the wildlife food base on a farm, but have little direct toxic effects on animals. Insecticides, however, can kill wildlife through direct toxic effects or after eating poisoned invertebrates.

Although we need to learn more about the harmful side effects of more intensive pesticide use, we can say this about the effects of minimum tillage on wildlife: (1) if weeds are controlled by herbicides, there is minimal physical disturbance to wildlife nesting in residue after planting time, but there is a pesticide toxicity risk; and (2) if weeds are controlled by cultivation, there is substantial chance of physical disturbance to residue-nesting wildlife.

Waterway Systems

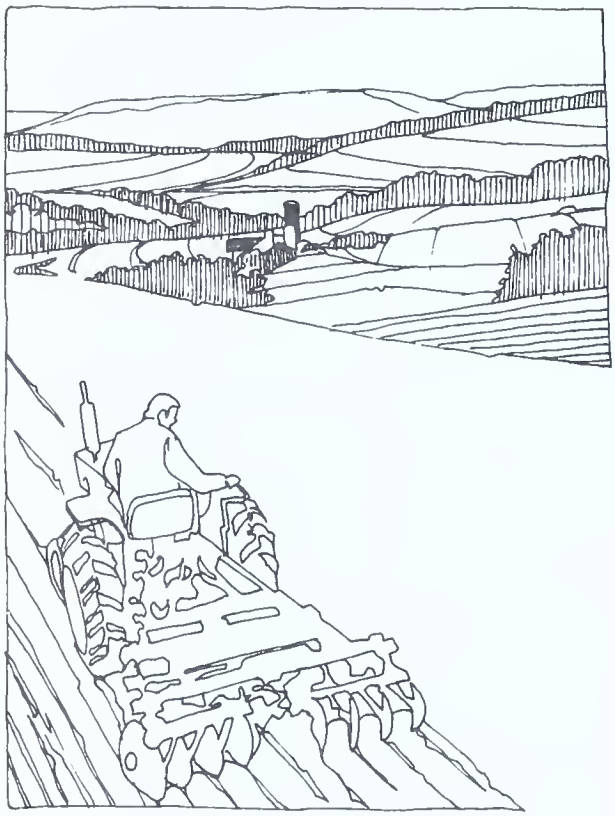
As excess surface storm water runs across fields, it tends to become concentrated and can form gullies. To prevent gullying and convey surface runoff water safely and at nonerosive speeds into watercourses or impoundments, a grassed waterway may be used. This practice involves a shaped outlet planted in sod cover of perennial grasses or legumes, or both. By selecting adapted grasses and legumes that benefit wildlife, you can control erosion and provide wildlife food and cover on the waterway.

Maintenance programs must be established on grassed waterways or outlets to maintain capacity of the structure, vegetative cover, and the outlet. Cool season grasses are usually seeded on waterways. These grasses are subsequently hayed by farmers during the nesting season of many birds. This can result in widespread nest destruction and the death or injury of incubating adults unless mowing is delayed until July.

Quality forage producing warm season grasses can be used on waterways. Warm season grasses begin growth later in the spring than do cool season grasses, and they maintain growth during the summer when cool season grasses are semi-dormant. As a result, optimal haying time is about one month later than with cool season grasses. This later haying date permits much nest completion. Warm season grasses also provide structurally superior wildlife habitat.

Diversion and Terrace Systems

Intensive row cropping without small grains or meadow in the rotation increases soil erosion and adversely affects many forms of wildlife. When fewer acres of forage crops, small grains, and idle areas are maintained, wildlife species that benefit from mosaics of habitat in agricultural ecosystems must range farther for their life needs. The survival rate of pheasant chicks to 5 or 6 weeks of age is significantly tied to the size of the area ranged by



MANY CONSERVATION practices applied to croplands to control erosion can also be beneficial in creating or maintaining wildlife habitat elements.

broods. The manner in which vegetative cover is managed on diversions and terraces can influence the size of the home range needed by such species for basic food and cover needs.

A diversion is a graded channel with a supporting ridge on the lower side; it is constructed across the slope of a field to intercept surface water runoff and carry it slowly to surface or underground outlets. The area occupied by the diversion is established in grasses and constructed with generally sloping sides to it can be easily maintained. Food and cover benefits for wildlife can be gained if grasses and legumes of value to wildlife are selected and planted in the diversion system. The value of a grass diversion as a travel lane for wildlife and as nesting cover for ground-nesting species can be realized only if mowing of diversion vegetation is limited to once annually, preferably after July 1. Limiting the use of a diversion for farm machinery access will also provide further protection for nesting birds, small broods, and other susceptible wildlife occupying these habitats. Permanent food and cover can be provided in some areas of a diversion system, particularly any surface outlets, by planting and maintaining them in woody vegetation.

A terrace is an earth embankment, or a ridge and channel, constructed across a slope of a field to intercept surface runoff water. A terrace reduces erosion on sloping cropland by shortening the slope and intercepting water runoff. Terraces may be constructed level or on a gradient. Terrace outlets may be the soil itself, a grass waterway for surface flow, or an underground tile outlet for subsurface flow.

Terraces can be broad based where the slopes are cropped or narrow based where slopes are not cropped but are planted to permanent vegetation.

The value of terrace systems to wildlife can be influenced by the type of vegetation planted on narrow-based terrace slopes and corresponding surface flow outlets; by delaying mowing of such slopes until midsummer; and by establishing shrubs at the outlets of tile drains to control scouring and provide cover.

Managing Pastureland and Hayland for Wildlife

As with croplands, when a farmer chooses his primary land use as either pasture or hay, his goals are to cost effectively establish and maintain these lands to furnish a high quality forage yield and to provide adequate soil protection. Several of the supporting treatments discussed above for croplands are also applicable to pastures and hayland. In addition, pastureland and hayland can support the needs of the farmer for both his livestock and wildlife if he carefully plans vegetative types and uses.

The use and management of tall growing, warm season grasses for supplementing midsummer forage and increasing production on soils which are limited in their ability to grow conventionally used, cool season grasses is gaining momentum among farmers in Pennsylvania. Most grasses found in Pennsylvania pastures grow rapidly in the spring, early summer and fall. Because of their growth characteristics, they become dormant during the hot/dry season, creating a slump in forage and quality and quantity. Warm season grasses such as switchgrass,

caucasion bluestem, big bluestem, and indiangrass grow primarily in the warm part of the summer and thrive in hot summer temperatures. By using a combination of perennial cool and warm season grasses, farmers can rotate cattle on nutritious forage throughout the growing season.

Wildlife research has shown that pheasants prefer the tall, densely stemmed stands of switchgrass over cool season grasses for nesting. The clumpy growth form also makes these grasses attractive nesting and cover sites for other wildlife species. Seasonal rotations of grazing or hay production allow wildlife to maximize protective use of warm season grasses for nesting and cover.

Further, the later haying date for warm season grasses fits better into farmers' schedules, as early summer is typically less busy than mid or late spring. The improved scheduling of warm season grass haying permits cutting at a time when forage quality is highest.

Managing Woodland for Wildlife

Many Pennsylvania farms contain woodland areas that provide a farmer with wood products to sell or use, areas in which he can pursue recreational interests, and many other benefits. Whatever his objectives, the farmer is interested in maintaining the quality of this forest resource base. He may be interested in ensuring that the available tree cover is made up of desired species for planned wood crop production; that adequate cover for watershed protection is maintained; or the erosion within the woodland is controlled within an acceptable limit.

Woodlands on farm lands also provide unique habitats and management opportunities for wildlife. One of the most popular woodland management practices in Pennsylvania is the establishment of field borders. By definition, field borders are strips of perennial vegetation established at the edge of a field by either planting or conversion from trees to herbaceous vegetation and shrubs. From a wildlife perspective, this conservation practice is one of the most effective ways of increasing the potential for both diversity and numbers of species in an area.

A well designed and maintained field border should provide a series of successively higher layers of vegetation in the transition zone between the field and the forest stand. The greater the number of distinct layers of vegetation represented in a field border, the more suitable an area is for supporting more diverse wildlife populations.

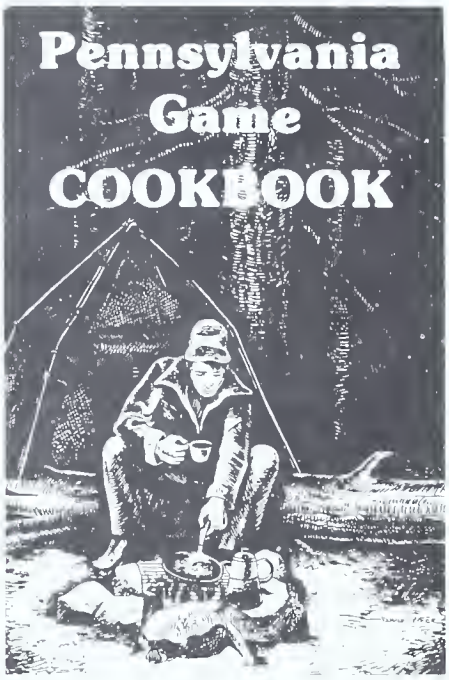
The procedure recommended for establishing a cut-back field border along a wood's edge is as follows:

1. Stand along the line of demarcation (the "hard" edge) between the field and forest cover types, facing the forest sector.
2. Examine the height and positioning of each shrub or tree within your field of view. Determine whether or not any part of these plants, if cut and felled perpendicular to your line of demarcation, would cross this boundary.
3. If any part of a shrub or tree so examined would cross the line when cut, that particular plant should be felled. If the plant does not cross the line, leave it standing.

This relatively easy procedure results in a field border composed of successively higher forms of vegetative cover progressing from the field edge toward the dominant forest canopy height of the residual stand. This technique works best along edges having full exposure to direct sunlight, but effective results have been achieved along shaded edges as well.

Slash (tops and stems) resulting from the cutting operation should be used to construct long brushpile windows parallel to the woodland edge; these provide immediate cover for wildlife until the desired living cover develops.

In time, the field border will require maintenance to continue providing optimum food and cover conditions for wildlife. The recutting interval depends upon the kinds of trees and shrubs in the border and other variables affecting their regrowth. When maintenance cutting is warranted, during the recutting operation, simply apply the same procedure as outlined above. Properly established field borders provide numerous benefits other than food and cover for wildlife. Such woodland border cuttings provide many useful byproducts to a landowner such as lumber, posts, and fuel wood. Removing tree growth along field edges also permits more efficient and profitable farming of these margins and eliminates the burden of removing dead trees and branches that are toppled into crop fields by strong winds.



Pennsylvania Game Cookbook is a 96-page collection of delicious recipes submitted by GAME NEWS readers. It includes methods of preparing all kinds of game available in Pennsylvania, plus some recipes for moose, elk, and other species. $4.00 delivered from GAME NEWS office.

Stream Protection Systems

Streambanks and adjacent riparian lands provide basic habitat requirements of water, food, cover, and nesting sites for many fish and wildlife species. Generally speaking, riparian habitats add habitat diversity and are capable of supporting large numbers of fish and wildlife populations.

Streambanks should be planted in appropriate vegetative cover. Vegetative cover helps regulate stream temperatures, provides food and cover for fish and wildlife, helps stabilize streambanks, and buffers the stream from the effects of erosion. Provision of streamside vegetation greatly enhances habitat for muskrats and other furbearers which have traditionally been a source of income for farm youths. Populations of these animals can be significantly increased by implementing streambank protection measures.

To protect the streams, enhance water quality and restore habitat along streams, it is essential that livestock be prevented from entering stream channels at will. Livestock trampling of streambanks accelerates bank erosion, eventually widening the stream channel beyond what it normally would be. As the channel widens, water velocities decrease, allowing silt particles to settle out. This destroys fish spawning habitat. Silt also smothers and eliminates habitat for aquatic invertebrates, a major food item for fish. As the stream widens and riparian vegetation is eliminated, more of the stream is exposed to the sun, resulting in increased water temperatures. Higher temperatures in summer render the stream unsuitable for species such as trout. In addition, allowing livestock to freely "loaf" in the stream channel contributes to nutrient and bacteria loading problems in downstream water supplies. Combined with nutrient runoffs from cultivated lands, the resulting degraded water quality not only has localized impacts but also adversely affects ecosystems such as Chesapeake Bay, a considerable distance downstream. Fencing an area at least 10 feet back from the top of the bank will provide a vegetative strip along the stream and prevent livestock access to the stream except at designated watering and crossover locations. Crossings should be constructed to reduce potential impacts by using techniques such as rock-lined crossings. Spring development as an alternate watering source should not be overlooked.

In-stream practices such as deflectors, Jack Dams, boulder placement, and riprap of banks at critical areas will also provide fish habitat.

"Bonus" Farmland Habitats for Wildlife

Most of the so-called odd areas on a farm, such as field corners, ditch banks, farm ponds, hedgerows, fence lines, and rights-of-way for power lines and gas lines, offer special habitat management opportunities. These areas can provide food and cover for wildlife almost year round, so long as vegetative components are not markedly disturbed by intensive farming.

Farm Ponds

During the past 50 years, farmers and rural landowners built thousands of small ponds to aid in water management and to provide a water supply that would not normally be available on the farm. Water for livestock, spraying, irrigation, and fire protection are traditional agricultural uses; however, recreational uses, esthetics, and fish and wildlife values are also prime goals of many pond owners.

Farm ponds can meet certain water needs, provide sport fishing, and contribute wildlife habitat in the vicinity of the pond. These benefits require suitable sites and commitment to maintain and manage the pond and adjacent land according to the owner's planned purposes.

Properly constructed and well managed farm ponds provide habitat for fish and associated aquatic organisms. Most ponds are stocked with fish, but the fact that a few fish are put in a pond does not mean that a desirable fish population will result. To develop satisfactory sport fishing, it is essential to stock the proper kinds and numbers of fish, manage them so they reproduce and grow, then harvest them in adequate numbers to avoid overcrowding.

Land adjacent to the pond site provides opportunities to enhance and develop habitat for upland wildlife species. Fruit producing wildlife shrubs and conifers may be interplanted to add wildlife habitat as well as to landscape the pond site. Pond edges should be kept free of woody plants that would prevent access and maintenance. Trees should not be planted on the dam as roots weaken the impoundment.

Farmstead Shelterbelts or Windbreaks

Farmstead shelterbelts and windbreaks are man-made habitats created by the planting of rows of trees or shrubs on the windward sides (usually north and west) of farm homes and adjacent buildings. Shelterbelts in intensively farmed areas provide valuable escape cover, breeding habitat, and foraging sites for a variety of game and nongame birds and mammals. These wooded habitats, when properly established and maintained, can provide protection against wind and drifting snow, reduce energy and feed costs to the farmer, and add beauty to the farm.

Shelterbelts should be at least 1/5 acre in size, as a large shelterbelt is more value to wildlife than a smaller one. The shelterbelt should consist of 8 to 10 rows of planting to achieve the best wind protection and resultant reduction in total energy costs. Certain species of trees and shrubs not only afford wind protection but also are valuable wildlife plantings and are appealing from an esthetic perspective. Shrubs, such as honeysuckle and verburnum, should be planted in the first rows (windward side). Slightly taller plantings, such as flowering crabapple, plum, and chokecherry, should go in row 2. A mixture of larger trees such as maples and poplars are good choices for rows 3 to 5. In particular, faster growing trees should be planted in rows 4 and 5 to give the necessary aerodynamic profile to increase wind protection. Rows 6 to 8 should contain spruce and pine species.

Request advice from your Conservation District Office before establishing a shelterbelt to ensure that the tree and shrub species selected for planting are suited to your region, soil and climatic conditions,

SWITCHGRASS, bluestem and Indiangrass thrive in summer temperatures. Research has shown that pheasants prefer the tall, densely stemmed stands of switchgrass over cool season grasses for nesting.

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and for recommendations for plant spacing between and within rows. By allowing the proper spacing between individual plants and rows, herbaceous growth will be encouraged between rows, thereby adding vegetative diversity to the shelterbelt for the benefit of wildlife. Plantings that are too closely spaced can create snow drifting problems and could have a negative effect on wildlife in winter by reducing their ability to find food or cover. Livestock grazing in shelterbelts should be discouraged because of the impact of grazing on vegetation, and, hence, on the value of the shelterbelt as a wind barrier and a wildlife habitat. Snags (dead or dying trees) should be retained in shelterbelts as they are important foraging and roosting sites for a variety of wildlife.

Rights-of-Way

Rights-of-way through farm lands may be largely associated with crops, pasture, and grassy areas. Habitats for wildlife may be enhanced by introducing a shrub community in these areas. For rights-of-way in Eastern states, a general recommendation is to encourage about 2/3 of the corridor in legume and grass and about 1/3 in mixed shrub communities. Small (50 square foot) clumps of shrubs spaced at 50- to 100-foot intervals along the corridor will provide shelter for a variety of wildlife and even nesting cover for certain species of songbirds.

For More Information

For further information and help on how to improve wildlife habitat on the farm while you conserve soil and water resources, contact one or more of the following offices:

Wildlife Habitat Planning Assistance
Contact: County Conservation District
USDA Soil Conservation Service

Cooperative Farm-Game and Safety Zone Project
Contact: Pennsylvania Game Commission

Woodlot Management Assistance
Contact: DER Bureau of Forestry

Stream Improvement Planning Assistance
Contact: Pennsylvania Fish Commission

Conservation Practice Cost-Share Programs
Contact: USDA Agricultural Stabilization and Conservation Service

Pond Construction and Management Assistance
Contact: USDA Soil Conservation Service
County Conservation District
Pennsylvania Fish Commission

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TEN THINGS YOU CAN DO FOR WILDLIFE

1. **Respect the Environment**—All facets of our environment—soils, plants, animals, air, water—are interrelated in a complex system. The quality of life is directly dependent upon this system, so we must all do our part to protect our environment and keep it clean.

2. **Conserve Water**—Water is such an everyday part of our lives that it's all too easy to take it for granted. Water is required for many home and industrial uses, for agriculture, for generating power, and even for recreation; yet our water resources are extremely susceptible to waste and abuse. Conserve water, it's precious.

3. **Don't Pollute or Litter**—The poisoning of our environment is one of the greatest threats facing mankind. Support all efforts to control pollution, and don't litter under any circumstances.

4. **Leave Baby Animals Alone**—Many young wild animals die prematurely because too many persons find them and think they've been abandoned. Such is rarely the case. Baby animals should be left in the wild where their mothers can properly care for them.

5. **Build and Erect Bird Houses**—Artificial nest boxes provide many kinds of cavity nesting birds with places to raise their young. House wrens, house finches, bluebirds and woodpeckers are just some of the bird species which can be expected to nest in appropriately placed nest boxes.

6. **Feed Birds in Winter**—Bird feeders can entice countless birds to within easy viewing distance. Cardinals, chickadees, nuthatches, goldfinches and many others can be easily attracted to your yard where they can brighten up a gloomy winter day.

7. **Plant Seedlings**—Food producing plants can fulfill the food and cover needs of many kinds of animals, and beautify a lawn as well. For an assortment of tree and shrub seedlings proven especially useful, buy the Game Commission's "Plantings for Wildlife" packet at the next spring sale in your area.

8. **Learn and Obey the Game Laws**—Familiarity with the state Game Laws will provide anyone with a general knowledge of the Game Commission's responsibilities and operations. Hunters, however, must be thoroughly familiar with the laws governing their sport. Sportsmen cannot afford the obnoxious actions of the ignorant hunter.

9. **Encourage Environmental Education in the Schools**—Natural resource management and conservation are subjects absent from most school curricula. Now, more than ever, it's imperative that people develop an "environmental awareness," and there's no better place to begin than in our schools.

10. **Support the Game Commission's "Working Together for Wildlife" Program**—This program provides everyone with an opportunity to support research and management programs directly benefiting nongame. Ospreys, bald eagles, river otters and bluebirds are just a few of the animals being helped through this program. Show your support for this program by buying and displaying "Working Together for Wildlife" patches, decals and fine art prints.

For more specific information on these suggestions and for more on how you can help wildlife, contact your local district game protector.

Interested in wildlife?

No matter how you enjoy Pennsylvania's wildlife and outdoors—through birdwatching, nature study, hunting, photography, or just by reading and learning about it—you'll find something to interest and help you in the 64 monthly pages of GAME NEWS. "50 Birds and Mammals of Pennsylvania" is typical of what you'll find regularly; articles and stories about birds and mammals, wildlife education, Pennsylvania history, conservation news, hunting, archery, wildlife research—anything in the Keystone State's forests, fields and mountains. It's easy to subscribe—and what a bargain! Only $9.00 for a year of fascinating issues, or $25.50 for three years. In Canada and foreign countries$10.00per year. U.S. funds. Send name, address (including Zip Code) and check or money order to . . .

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